

ABSTRACT OF THE DISCLOSURE

A phase-locked loop includes a phase detector, a loop filter, a voltage controlled oscillator and a frequency divider arranged such that the phase detector generates a phase detector output signal as a function of a phase difference between the reference clock signal and the feedback signal; the loop filter generates a frequency control signal from the phase detector output signal; the voltage controlled oscillator generates a phase-locked loop output signal that has a frequency that is controlled by the frequency control signal; and the frequency divider generates the feedback signal from the phase-locked loop output signal.

The phase-locked loop further includes one or more circuit elements that maintain an operating point of the phase detector such that, for a predetermined range of both positive and negative phase differences between the reference clock signal and the feedback signal, the output signal is generated as a substantially linear function of the phase difference between the reference clock signal and the feedback signal.